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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HOANG, ANN THI	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/801,241	TOTH, JAMES	
	Examiner	Art Unit	
	Ann T. Hoang	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☒ Claim(s) *1 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 5, line16, the low voltage load should be referenced with the number 76 in order to be consistent with the drawings. Furthermore, there does not appear to be support in the specification for the limitations directed toward the plug-in connectors and socket recited in claim 8. Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the plug-in connectors and socket recited in claim 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1 and 10 are objected to because of there is insufficient antecedent basis for "said second voltage source" in lines 8-9 of claim 1 and line 10 of claim 10, respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ertzsaenger et al. (US 6,894,404) in view of Whitney (US 2004/0109275).

Regarding claim 1, Ertzsaenger et al. discloses an electrical overvoltage protection circuit in a dual voltage electrical distribution system (1) having a common return path, a high voltage energy source (U2) supplying energy at a first voltage potential to a first load (R1) via a first distribution wire, a low voltage energy source (U1) supplying energy at a second voltage potential lower than said first voltage potential to a second load (R4) via a second distribution wire in physical proximity with the first distribution wire, the protection circuit comprising: a first switching element (S1) in series

between high voltage energy source (U2) and said first distribution wire, and a voltmeter unit (3) in electrical contact with said first switching element (S1), connected across said second distribution wire and the common return path, whereby when a crossover occurs during which said second distribution wire becomes cross-connected to said first distribution wire, said voltmeter unit (3) detects an overvoltage condition on the low voltage side and switches first switching element (S1) to open, thereby discontinuing the overvoltage condition. See abstract; Figure; and column 2, lines 50-59. Ertzsaenger et al. discloses the need to disconnect the high voltage energy source (U2) from the low energy voltage source (U1) during crossover in order to protect the low voltage side from overvoltage, but does not disclose a PTC current-limiting device or a voltage-limiting circuit element to be the means of disconnection.

However, Whitney discloses an integrated, resettable overvoltage and overcurrent device comprising a PTC current-limiting device (10) in series between a voltage source and a load, and a voltage-limiting circuit element (12) in thermal contact with said PTC current-limiting device (10), connected across said load and a common return path, whereby when the load is short circuited or the circuit experiences a power surge, or when voltage-limiting circuit element (12) detects an overvoltage across the load, said voltage-limiting circuit element (12) conducts a large current and generates heat which is transferred to said PTC current-limiting device (10) thereby aiding said PTC current-limiting device (10) to switch from an untripped state to a tripped state and limiting current flow from the voltage source through the load to a nonhazardous level. PTC current-limiting device (10) and voltage-limiting circuit element (12) are thermally

coupled to provide both overvoltage protection via voltage-limiting circuit element (12) and overcurrent protection via PTC current-limiting device (10). See abstract; Fig. 1; and paragraphs 3, 7 and 30.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the voltage-limiting circuit element and the PTC current-limiting device, that is the overvoltage and overcurrent devices, of Whitney as the electrical overvoltage protection circuit of Ertzsaenger et al. in order to provide an integrated, resettable means of providing both overvoltage and overcurrent protection in the dual voltage electrical distribution system via inexpensive electrical components. It would have further been obvious to one of ordinary skill in the art at the time of the invention to connect the voltage-limiting circuit element of Whitney across the second distribution wire and common return path of Ertzsaenger et al. in order to sense an overvoltage on the low voltage side of the dual voltage electrical distribution system, and connect the PTC current-limiting device of Whitney in series between the low voltage source and second distribution wire of Ertzsaenger et al. in order to sense an overcurrent relative to the high side of the dual voltage electrical distribution system and cut off current flow from the low voltage side to the high voltage side with the aid of the thermal conduction from the voltage-limiting circuit element, thereby discontinuing the overcurrent condition.

The references do not disclose having a voltage limit of a voltage-limiting circuit element set to be below a high voltage energy source potential and above a low voltage energy source potential of a dual voltage electrical distribution system. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to

make the voltage-limiting circuit element have a voltage limit set to be below said first voltage potential, that is the potential of the high voltage energy source, because the lowest overvoltage in the low voltage side of the dual voltage electrical distribution system would be at most the voltage of the high voltage energy source; setting it above the potential of the high voltage energy source would result in the voltage-limiting circuit element beginning to protecting the low voltage side from overvoltage much later than at the onset of overvoltage and too late for effective protection. It also would have been obvious to one of ordinary skill in the art at the time of the invention to make the voltage-limiting circuit element have a voltage limit set to be above said second voltage potential, that is the potential of the low voltage energy source, because an overvoltage in the low side of the low voltage side of the dual voltage electrical distribution system would be at least just above the voltage of the low voltage energy source; setting it below the potential of the low voltage energy source would result in the voltage-limiting circuit element acting as a short to the common return path before an overvoltage actually occurred and aid the PTC current-limiting device in cutting off current flow from the low voltage energy source before it was necessary.

Regarding claim 2, Whitney discloses that voltage-limiting circuit element (12) comprises a zener diode in thermal contact with said PTC current-limiting device (10), the zener diode (12) having a cathode electrode connected to PTC current-limiting device (10) and having an anode electrode connected to the common return path. See Fig. 1 and paragraph 30. Zener diode (12) would necessarily have a reverse avalanche breakdown voltage, in other words a voltage limit, selected to be above said second

voltage potential and below said first voltage potential. See above rejection on claim 1. Additionally, with the anode electrode of zener diode (12) connected to the common return path, the cathode electrode would be connected to the second distribution wire of Ertzsaenger et al., as discussed in the above rejection on claim 1.

Regarding claim 3, Whitney discloses that said PTC current-limiting device (10) comprises a polymeric positive temperature coefficient (PPTC) device. See paragraphs 4 and 6.

Regarding claim 9, Ertzsaenger et al. discloses that the electrical distribution system is in a motor vehicle. See abstract. The common return path would include a conductive chassis of the motor vehicle, as the use of a conductive chassis in a motor vehicle as a common return path for the electrical components of the motor vehicle is obvious and expedient in the art.

Regarding claim 10, Whitney discloses PTC current-limiting device (10) and voltage-limiting circuit element (12) to be integrated into a single circuit module. See paragraph 2. The module for protecting a dual voltage electrical distribution system from damage resulting from a cross-connection, as recited in claim 10, would be provided in of the above mentioned electrical overvoltage protection circuit. See above rejection on Claim 1.

6. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ertzsaenger et al. (US 6,894,404) in view of Whitney (US 2004/0109275), as applied to claim 1 above, and further in view of Binder et al. (US 6,639,389).

Regarding claim 4, neither Ertzsaenger et al. nor Whitney disclose a fuse in

series between an energy source and a distribution wire. However, Binder et al. discloses an electrical overvoltage protection circuit in a dual voltage electrical distribution system comprising a first fuse (S2) in series between a first energy source (1) and a first distribution wire (9), whereby when a crossover (16, 17) occurs a voltage limiting element (6) conducts a sufficiently large current to blow the first fuse (S2) and thereby disconnect the first distribution wire (9) from the first energy source (1). See Fig. 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the first fuse (S2) of Binder et al. into the electrical overvoltage protection circuit of Ertzsaenger et al. in order to provide added protection for the first distribution wire and downstream loads against excessive current flow.

Regarding claim 5, neither Ertzsaenger et al. nor Whitney disclose a fuse in series between an energy source and a PTC current-limiting device. However, Binder et al. discloses a second fuse (S3) in series between a second energy source (2) and a second distribution wire (10). See Fig. 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the second fuse (S3) of Binder et al. into the electrical overvoltage protection circuit of Ertzsaenger et al. in view of Whitney in order to provide added protection for the second distribution wire and downstream loads against excessive current flow. Placing the second fuse in series with the second energy source, as disclosed by Binder et al., would be placing it in series between the second energy source and the PTC current-limiting device.

Regarding claim 6, Whitney discloses PTC current-limiting device (10) and voltage-limiting circuit element (12) to be integrated into a single circuit module. See paragraph 2.

Regarding claim 7, Whitney discloses PTC current-limiting device (10) and voltage-limiting circuit element (12) to be provided in a single circuit module (100) with electrically conductive terminals (120, 122, 124). See Fig. 2 and paragraphs 32 and 33. Terminals (120, 122, 124) are for hard wiring the circuit module (100) to power, ground, and a load in an electrical system.

Regarding claim 8, the references do not disclose a protective circuit module that includes plug-in connectors and is plugged into a socket of an electrical distribution system. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrically conductive terminals of the circuit module of Whitney to comprise plug-in connectors for plugging into a socket of the electrical distribution system in order to provide a means to easily remove or install the protective circuit module for testing or replacement. The use of plug-in connectors and sockets for easy removeability and installation of electrical devices is obvious and expedient in the art.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Downey (US 4,267,430) discloses a fuse connected to a low voltage thermistor for crossover protection in a dual voltage system. Hoshino et al. (JP 2001-037092) discloses overvoltage protection in a dual voltage distribution system that

employs a fuse and PTC thermistors in the event of a crossover. Bloeman (US 4,700,130) discloses replacing a safety fuse with a PTC resistor and amplifier circuit for resetability. Sopory (US 6,492,629) discloses a resettable fuse device which provides overcurrent and overcurrent protection, and which comprises a PTC device and a voltage sensitive element. Lee et al. (US 5,426,556) discloses the use of a polymer PTC device for overvoltage and overcurrent protection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann T. Hoang, whose telephone number is 571-272-2724. The examiner can normally be reached Mondays through Fridays, 8:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reached at 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12/16/05

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PRIMARY EXAMINER